

REMARKS

This application has been amended so as to place it in condition for allowance at the time of the next Official Action.

The Official Action rejects claims 1, 3, 24, 26, and 31-34 under 35 USC §103(a) as being unpatentable over SUDA et al. in view of OLSEN et al., and further in view of XIE et al. Of the rejected claims, all but claim 32 are canceled by the present amendment. Claim 32 now depends from new independent claim 37. Accordingly, the present rejection no longer applies to claim 32 by virtue of its updated dependency. The features of new claim 37 implicitly recited by rejected claim 32 are addressed in detail below.

The Official Action rejects claims 4, 17, 19-21, and 30 under 35 USC §103(a) as being unpatentable over the references applied in the previous obviousness rejection, and further in view of WILLIAMS et al. Each of the rejected claims is canceled, necessarily rendering the rejection moot.

The Official Action rejects claims 5-8, 35, and 36 under 35 USC §103(a) as being unpatentable over SUDA et al. in view of WILLIAMS et al. Of the rejected claims, only claims 35 and 36 remain in the application. Each of such claims has been amended to depend, ultimately, from new independent claim 37, so the present rejection no longer applies. The details of new independent claim 37 are addressed below.

The Official Action rejects the following claims under 35 USC §103(a) as unpatentable over the identified references: claim 9 over SUDA et al. in view of OLSEN et al., XIE et al., and SATO et al.; claim 14 over SUDA et al. in view of OLSEN et al., XIE et al., and SUDA; claims 15 and 16 over SUDA et al. in view of OLSEN et al., XIE et al., and KANEDA; claim 18 over SUDA et al. in view of OLSEN et al., XIE et al., and MCINTYRE et al.; claim 22 over SUDA et al. in view of OLSEN et al., XIE et al., and LEE; claim 23 over SUDA et al. in view of OLSEN et al., XIE et al., LEE, and WILLIAMS et al.; and claim 25 over SUDA et al. in view of OLSEN et al., XIE et al., and SUDA. Applicant has canceled each of the rejected claims, and reconsideration and withdrawal of such rejections are therefore respectfully requested.

The Official Action explicitly notes that claims 10-13 and 27-29 are allowable but for their dependence from a rejected base claim. Applicant has amended each of claims 10 and 27 into independent form by incorporating the features of the independent claims from which they originally depended. As a result, these seven claims are believed to be in condition for immediate allowance.

As discussed above, applicant has added new claims. 37-62. Of these, claims 37 and 56 are independent device claims, and claim 62 is an independent method claim.

Independent claim 37 recites, among other features, the requirement that the device perform an iterative process including the steps of performing a coarse focusing using only a first range of spatial frequency components of the image using a "hill-climbing" technique. After the coarse focusing step, the device performs a fine focusing using only a second range of spatial frequency components of the image. The second range is specifically recited as being higher than the first range.

The fine focusing step is also defined as using a curve-fitting technique. Applicant has explicitly defined the curve-fitting technique as comprising adapting a mathematical function and calculating the maximum value of such function. The definition of the curve-fitting technique is provided, at least, in the first full paragraph on page 6 of the present specification as originally filed.

In rejecting previous claims that recited separate steps utilizing hill-climbing and curve-fitting techniques, the Official Action has relied on the XIE et al. reference, specifically column 2, lines 5-21 and the illustration of Figure 5. In the analysis provided by the Official Action, the curve identified as B is construed as the recited hill-climbing portion of the focusing procedure, and the curve identified as A is construed as the curve-fitting portion. Such interpretation appears to be in stark contrast to the specific description

provided in the identified language of the XIE et al. specification, however.

The XIE et al. reference describes the sequence starting with the transition from the B curve to the A curve as follows: "Once the peak of the hill is passed, the high frequency bandpass filter is loaded (stage 9), and the lens is moved in the opposite direction until the peak of the higher 'hill' is found (curve A in FIG. 5)." As is clear from this description, the XIE et al. reference specifically teaches using two iterations of a hill-climbing technique, albeit with different frequency ranges.

Utterly absent from this or any other known reference is the recited combination of a coarse focusing step using only a first range of spatial frequency components of the image using a hill-climbing technique, followed by a fine focusing step that uses only a second range of spatial frequency components of the image higher than those of the first range, using a curve-fitting technique. The fine focusing step of XIE et al. is clearly implemented based on a hill-climbing technique, which cannot reasonably be interpreted as adapting a mathematical function and calculating a maximum value of such function.

For at least this reason, new independent claim 37 and all claims that ultimately depend therefrom are believed to be allowable over the prior art, including the XIE et al. patent considered independently or in combination with any other prior art reference.

New independent claim 56 is a new independent device claim that recites, among other features, a radiometric instrumentation connected to receive as an input the image signal generated by the image detector. The radiometric instrumentation is specifically constructed and arranged to generate a radiometric output signal. The focusing device is further recited in terms of the fact that it selects the image window used for focusing based on thermal properties of objects represented in the image as determined by the radiometric instrumentation.

In rejecting previous claims pending in the application, the Official Action has applied the WILLIAMS et al. reference. The WILLIAMS et al. patent is directed to an airborne infrared fire surveillance system providing firespot geopositioning. The applied reference describes both structure and method that help to automate the detection of forest fires. As one would expect from such a device and method, the WILLIAMS et al. device performs optical scans that utilize the infrared range to identify the area within a field of view that represents an object whose temperature is much higher than the surrounding content in the field. The WILLIAMS et al. device then serves its ultimate purpose by using the techniques of GPS positioning and telemetry to provide the intended output, namely an identification of position of such hot spots.

In this regard, the WILLIAMS et al. approach does use an optical scan within the infrared range to find an area of highest temperature. What is utterly lacking from the WILLIAMS et al. reference, considered either independently or in conjunction with the other known prior art references of record, is any teaching or suggestion that a device should perform an automated focusing function by specifically choosing to direct the focusing efforts on that portion of the overall scan which represents a specified temperature, be it the highest, lowest, or specified range of temperature. For the purposes of the telemetry and GPS-based position identification of WILLIAMS et al., there exists no need for any particular focusing approach. Considering the distances that are present between the scanning device and the forest fires in the WILLIAMS et al. implementation, the focus is, for all intents and purposes, set to infinity.

In sum, the mere teaching of the identification of a highest temperature region of an optical scan provides no teaching or suggestion of an automated focus technique which specifically chooses to focus on such hottest region, or any other temperature-identified region.

The third new independent claim is method claim 62. Claim 62 recites, among other features, the sequential hill-climbing and curve-fitting steps as defined in new device claim 37, and as discussed in detail above.

In light of the amendments provided above and the arguments offered in support thereof, applicant believes that the present application is in condition for allowance and an early indication of the same is respectfully requested.

If the Examiner has any questions or requires further clarification of any of the above points, the Examiner may contact the undersigned attorney so that this application may continue to be expeditiously advanced.

Please charge the fee of \$400 for two extra independent claims added herewith to Deposit Account No. 25-0120.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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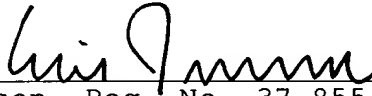
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